<u>TestAmerica</u>

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica





Job Number: 280-8169-1

Job Description: PFC Analysis

For:

Dalton Utilities 1200 V.D. Parrott Jr. Parkway Dalton, GA 30721

Attention: Ms. Dena Haverland

Michelle S. Johnst

Approved for release Michelle Johnston Project Manager 1 10/21/2010 7:14 AM

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10/21/2010
Revision: 1

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is E87667.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.





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CASE NARRATIVE

Client: Dalton Utilities Project: PFC Analysis Report Number: 280-8169-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

The PFC method DV-LC-0012 is an isotope dilution method; therefore, the internal standards are added prior to the extraction process. This technique inherently corrects for variability in the extraction efficiency due to sample matrix. Dilution of samples beyond the ability of the instrument to detect the internal standards is not recommended. Analyses performed at a dilution level requiring additional internal standard to be added after the extraction step in order to quantitate results has been shown to yield results with a significant low bias. As a result, data have been reported that exceed the calibration range and are qualified as estimated.

The PFC method is an isotope dilution method where the internal standards are added prior to extraction and used to quantitate results; therefore, the use of dilution factors is inappropriate. Application of dilution factors would yield results that are artificially high. Reporting limits and method detection limits are not adjusted for dilutions unless samples are fortified with additional internal standard, which is not recommended.

Internal standard abundances may vary depending upon both recovery and the dilution at which the analysis is performed. This is an inherent feature of the isotope dilution technique and is not indicative of bias to the reported results.

Receipt

The following report contains the analytical results for one soil sample received at TestAmerica Denver on October 7, 2010, according to documented sample acceptance procedures. The sample was received in good condition at a temperature of 3.6°C. No anomalies were encountered during sample receipt.

PFC

Sample AB-5 (280-8169-1) was analyzed for PFC in accordance with SOP DV-LC-0012. The sample was prepared on 10/15/2010 and analyzed on 10/19/2010.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high concentrations of target analytes, sample AB-5 (280-8169-1) had to be analyzed at a 5X dilution. Internal standards (IS) were not fortified, therefore, the IS percent recoveries need to be multiplied by 5 and the MDLs/RLs were not updated due to limitations in the software.

Perfluorobutanoic acid (PFBA) was detected in method blank MB 280-35882/1-A at a level less than one half the reporting limit; therefore, corrective action is deemed unnecessary. The value should be considered an estimate, and has been flagged "J". If the associated sample reported a result above the MDL and/or RL, the result has been "B" flagged.

The MS/MSD analyses associated with prep batch 280-35882 was performed on sample 280-8066-6. The MS and MSD exhibited spike compound recoveries and/or RPD data outside the control limits for Perfluorotetradecanoic acid (PFTeA) and Perfluorotridecanoic acid (PFTriA). The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

Internal standard responses were outside the control limits for sample AB-5 (280-8169-1) and for the MS/MSD associated with prep batch 280-35882. The sample shows evidence of matrix and target analyte interferences. This is an isotope dilution method and the sample was diluted 5X without fortifying the internal standards. This means the internal standards were also diluted and the recoveries could not be accurately calculated.

Refer to the QC report for details.

No other difficulties were encountered during the PFC analysis.

All other quality control parameters were within the acceptance limits.

Percent Solids

Sample AB-5 (280-8169-1) was analyzed for percent solids in accordance with EPA SW846 3550C. The sample was analyzed on 10/08/2010.

The Percent Moisture sample duplicate analysis data associated with analytical batch 280-34968 exhibited RPD data outside the QC



control limits.

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Refer to the QC report for details.



ther difficulties were encountered during the % solids analysis.

All other quality control parameters were within the acceptance limits.

Revision

The report was revised to include the internal standard outage and dilution narratives under the PFC section of the case narrative.





Job No.: 280-8169-1

TestAmerica Denver

Lab Name:

| SDG No.: | | | The state of the s | | | | |
|----------------------------------|----------------------------------|-----------|--|---|----------------------------|---------------|----------|
| Instrument ID: LC_LCMS5 | LC_LCMS5 | Analys | Analysis Batch Number: 36351 | 5.1 | (| | |
| Lab Sample ID: | STD0020 280-36351/4 | Client | Client Sample ID: | | S | smc / | 01-07-01 |
| Date Analyzed: 10/19/10 01:48 | 10/19/10 01:48 | Lab Fi | Lab File ID: pc50J18b008.d | | GC Column: Gemini-NX | Gemini-NX | ID: |
| COMP | COMPOUND NAME | RETENTION | | MANUAL INTEGRATION | GRATION | | |
| | | TIME | REASON | | ANALYST | DATE | |
| Perfluorobutane | Perfluorobutane Sulfonate (PFBS) | 4.84 | Baseline | | williamst 10/19/10 12:12 | 0/19/10 12:12 | % X |
| Lab .Sample ID: ICV 280-36351/11 | ICV 280-36351/11 | Client | Client Sample ID: | • | | | • • • • |
| Date Analyzed: 10/19/10 03:20 | 10/19/10 03:20 | Lab Fi | Lab File ID: pc50J18b015.d | | GC Column: Gemini-NX | Gemini-NX | ID: |
| COMP | COMPOUND NAME | RETENTION | | MANUAL INTEGRATION | GRATION | - | . • • |

REASON

3.63 Baseline 4.84 Baseline

TIME

Perfluorobutanoic acid (PFBA) Perfluorobutane Sulfonate (PFBS)

| Lab Name: TestAmerica Denver | America Denver | Job No.: 280~8169-1 | | |
|------------------------------|------------------|------------------------------|----------------------|----------|
| SDG No.: | | | | |
| Instrument ID: LC LCMS5 | LC LCMS5 | Analysis Batch Number: 36437 | | |
| Lab Sample ID: | CCV 280-36437/63 | Client Sample ID: | | |
| Date Analyzed: 10/19/10 | 10/19/10 19:08 | Lab File ID: pc50J18b107.d | GC Column: Gemini-NX | emini-NX |

| | | 59 | |
|--------------------|---------|----------------|--|
| | DATE | 10/20/10 06:59 | |
| SGRATION | ANALYST | williamst | |
| MANUAL INTEGRATION | REASON | 3.57 Baseline | |
| RETENTION | TIME | 3.57 | |
| COMPOUND NAME | | 3C4 PFBA (IS) | |

| nent ID: | nent ID: LC_LCMS5 | Analysi | Analysis Batch Number: 3643/ | | |
|-----------|---------------------------|-----------|------------------------------|--------------------|---------------|
| nple ID: | nple ID: CCV 280-36437/63 | Client | Client Sample ID: | ٠ | |
| nalyzed: | nalyzed: 10/19/10 19:08 | Lab Fil | Lab File ID: pc50J18b107.d | | აე ე <u>ე</u> |
| OS | COMPOUND NAME | RETENTION | MAN | MANUAL INTEGRATION | SRATION |
| | | TIME | REASON | | ANALYS |
| PFRA (TS) | | 3.57 | 3.57 Baseline | | william |

ID:

LCMS MANUAL INTEGRATION SUMMARY

| Lab Name: TestAmerica Denver | Job No.: 280-8169-1 | |
|---|-----------------------------------|--|
| SDG No.: | | *************************************** |
| Instrument ID: LC_LCMS5 | Analysis Batch Number: 36351 | |
| Lab Sample ID: STD0002 280-36351/1 I | IC Client Sample ID: | |
| Date Analyzed: 10/19/10 01:09 | Lab File ID: pc50J18b005.d | GC Column: Gemini-NX ID: |
| COMPOUND NAME | NO | |
| | TIME REASON | ANALYS'I DATE |
| Perfluorobutane Sulfonate (PFBS) Perfluorohexanoic acid (PFHxA) | 4.83 Baseline 5.31 Assign Peak | williamst 10/19/10 12:12 williamst 10/19/10 12:11 |
| Lab Sample ID: STD0005 280-36351/2 I | IC Client Sample ID: | |
| Date Analyzed: 10/19/10 01:22 | Lab File ID: pc50J18b006.d | GC Column: Gemini-NX ID: |
| COMPOSIND NAME | RETENTION MANUAL IN | INTEGRATION |
| | REASON | ANALYST DATE |
| Perfluorobutane Sulfonate (PFBS) | 4.84 Baseline | williamst 10/19/10 12:11 |
| Lab Sample ID: STD0020 280-36351/4 | Client Sample ID: | |
| Date Analyzed: 10/19/10 01:48 | Lab File ID: pc50J18b008.d | GC Column: Gemini-NX ID: |
| COMPOUND NAME | RETENTION MANUAL INT | INTEGRATION |
| | TIME | ANALYST DATE |
| Perfluorobutane Sulfonate (PFBS) | 4.84 Baseline | williamst 10/19/10 12:12 |
| Lab Sample ID: STD1250 280-36351/9 I | IC Client Sample ID: | |
| Date Analyzed: 10/19/10 02:54 | Lab File ID: pc50J18b013.d | GC Column: Gemini-NX ID: |
| COMPOUND NAME | RETENTION MANUAL INT | INTEGRATION |
| | TIME REASON | ANALYST DATE |
| Perfluorobutanoic acid (PFBA) | 3.63 Baseline | 10/19/10 12:1 |
| Perfluoropentanoic acid (PFPA) | 4.72 Baseline | williamst 10/19/10 12:13 |









Job No.: 280-8169-1 Lab Name: TestAmerica Denver

SDG No.:

36351 Analysis Batch Number: LC_LCMS5 Instrument ID:

ICV 280-36351/11 Lab Sample ID:

GC Column: Gemini-NX Lab File ID: pc50J18b015.d Client Sample ID: 10/19/10 03:20 Date Analyzed:

| | Date Analyzed: 10/19/10 03:20 Lab File ID: pc50J18b015.d GC Column: Gemini-NX ID: | GC Colur | 1 1 | Lab File ID: | 10/19/10 03:20 |
|----------------|---|--------------------|------|--------------|----------------|
| TOT THIS TOTAL | | MANUAL INTEGRATION | MANU | RETENTION | COMPOUND NAME |

| CONTROON INFINE | RETENTION | MANOAL INIE | INTEGRALION | |
|----------------------------------|-----------|---------------|-------------|----------------|
| | TIME | REASON | ANALYST | DATE |
| Perfluorobutanoic acid (PFBA) | 3.63 | 3.63 Baseline | williamst | 10/19/10 12:27 |
| Perfluorobutane Sulfonate (PFBS) | 4.84 | 4.84 Baseline | williamst | 10/19/10 12:27 |

LCMS MANUAL INTEGRATION SUMMARY

Job No.: 280-8169-1 Lab Name: TestAmerica Denver

LC_LCMS5

SDG No.:

36437 Analysis Batch Number: Instrument ID:

Lab File ID: pc50J18b107.d Client Sample ID: CCV 280-36437/63 10/19/10 19:08 Date Analyzed: Lab Sample ID:

| COMPOUND NAME | RETENTION | MANUAL INTEGRATION | SGRATION | |
|--|-----------|--------------------|----------|----------------|
| | TIME | REASON | ANALYST | DATE |
| The state of the s | | | | 10/00/10 06.50 |
| 13C4 PFBA (IS) | 3.57 | 3.57 Baseline | WILLamst | 10/20/10 00:33 |

ID:

GC Column: Gemini-NX



SAMPLE SUMMARY

Client: Dalton Utilities

Job Number: 280-8169-1

| | | | Date/Time | Date/Time | |
|---------------|------------------|---------------|-----------------|-----------------|---|
| Lab Sample ID | Client Sample ID | Client Matrix | Sampled | Received | - |
| 280-8169-1 | AB-5 | Solid | 10/06/2010 1405 | 10/07/2010 0900 | |



EXECUTIVE SUMMARY - Detections

Client: Dalton Utilities

Job Number: 280-8169-1



| ID | | Reporting | | |
|------------------|--|--|---|--|
| Result / Qualifi | fier | Limit | Units | Method |
| | | | • | |
| 1700 | | 3.1 | ug/Kg | DV-LC-0012 |
| 230 | В | 3.1 | ug/Kg | DV-LC-0012 |
| 380 | | 3.1 | ug/Kg | DV-LC-0012 |
| 120 | | 7.8 | ug/Kg | DV-LC-0012 |
| 56 | | 3.1 | ug/Kg | DV-LC-0012 |
| 13 | | 3.1 | ug/Kg | DV-LC-0012 |
| 310 | | 3.1 | ug/Kg | DV-LC-0012 |
| 86 | | 3.1 | ug/Kg | DV-LC-0012 |
|) 280 | | 7.8 | ug/Kg | DV-LC-0012 |
| 310 | | 7.8 | ug/Kg | DV-LC-0012 |
| 630 | | 3.1 | ug/Kg | DV-LC-0012 |
| . 140 | | 3.1 | ug/Kg | DV-LC-0012 |
| 25 | | 7.8 | ug/Kg | DV-LC-0012 |
| 110 | | 7.8 | ug/Kg | DV-LC-0012 |
| 250 | | 7.8 | ug/Kg | DV-LC-0012 |
| 36 | | 0.10 | % | D-2216 |
| | 1700 230 380 120 56 13 310 86) 280 310 630 140 25 110 250 | 1700 230 B 380 120 56 13 310 86) 280 310 630 140 25 110 250 | 1700 3.1 230 B 3.1 380 3.1 120 7.8 56 3.1 310 3.1 310 3.1 36 3.1 310 3.1 36 3.1 310 3.1 36 3.1 310 7.8 310 7.8 630 3.1 3.1 25 7.8 110 7.8 250 7.8 | 1700 3.1 ug/Kg 230 B 3.1 ug/Kg 380 3.1 ug/Kg 120 7.8 ug/Kg 13 3.1 ug/Kg 310 3.1 ug/Kg 310 3.1 ug/Kg 86 3.1 ug/Kg 310 3.1 ug/Kg 310 3.1 ug/Kg 310 3.1 ug/Kg 310 7.8 ug/Kg 25 7.8 ug/Kg 25 7.8 ug/Kg 25 7.8 ug/Kg 250 25 |





METHOD SUMMARY



Job Number: 280-8169-1

| Description | Lab Location | Method | Preparation Method | |
|-----------------------------|--------------|--------------------|--------------------|--|
| Matrix: Solid | | | | |
| Perfluoronated Hydrocarbons | TAL DEN | TAL-DEN DV-LC-0012 | | |
| Leaching procedure for PFCs | TAL DEN | | TAL-DEN PFC leach | |
| ASTM D-2216 | TAL DEN | ASTM D-221 | 6 | |

Lab References:

TAL DEN = TestAmerica Denver

Method References:

ASTM = ASTM International

TAL-DEN = TestAmerica Laboratories, Denver, Facility Standard Operating Procedure.





METHOD / ANALYST SUMMARY

Client: Dalton Utilities

Job Number: 280-8169-1



| Method | Analyst | Analyst ID |
|--------------------|--------------------|------------|
| TAL-DEN DV-LC-0012 | Williams, Teresa L | TLW |
| ASTM D-2216 | Berry III, Paul B | PBB |





Analytical Data

Client: Dalton Utilities

Client Sample ID:

AB-5

Lab Sample ID:

280-8169-1

Client Matrix:

Solid

% Moisture:

36.0

Job Number: 280-8169-1

Date Sampled: 10/06/2010 1405

Date Received: 10/07/2010 0900

DV-LC-0012 Perfluoronated Hydrocarbons

Method: Preparation:

Dilution:

DV-LC-0012

PFC leach

Analysis Batch: 280-36437

Prep Batch: 280-35882

Instrument ID: Lab File ID:

LC_LCMS5

1.0

Initial Weight/Volume: Final Weight/Volume:

pc50J18b100.d 10.06 g

10/19/2010 1738

50 mL

Date Analyzed: Date Prepared:

10/15/2010 0854

Injection Volume:

25 uL

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL. | RL | |
|-------------------------|--------------------|----------------|--|------|-----|--|
| Perfluorobutane Sulfon | ate (PFBS) | 1700 | Comments and the Confederation of the Profession of the American Association of the American Association (Association) | 1.3 | 3.1 | |
| Perfluorobutanoic acid | (PFBA) | 230 | В | 0.53 | 3.1 | |
| Perfluorodecanoic acid | (PFDA) | 380 | | 1.2 | 3.1 | |
| Perfluorododecanoic ad | cid (PFDoA) | 120 | | 1.3 | 7.8 | |
| Perfluoroheptanoic acid | d (PFHpA) | 56 | | 1.1 | 3.1 | |
| Perfluorohexane Sulfor | nate (PFHxS) | 13 | | 1.2 | 3.1 | |
| Perfluorohexanoic acid | (PFHxA) | 310 | | 0.31 | 3.1 | |
| Perfluorononanoic acid | (PFNA) | 86 | | 0.78 | 3.1 | |
| Perfluorooctane Sulfon | amide (FOSA) | 280 | | 1.9 | 7.8 | |
| Perfluorooctanoic acid | (PFOA) | 310 | | 1.6 | 7.8 | |
| Perfluorooctane Sulfon | ate (PFOS) | 630 | | 0.58 | 3.1 | |
| Perfluoropentanoic acid | d (PFPA) | 140 | | 1.4 | 3.1 | |
| Perfluorotetradecanoic | acid (PFTeA) | 25 | | 2.3 | 7.8 | |
| Perfluorotridecanoic Ac | sid (PFTriA) | 110 | | 1.8 | 7.8 | |
| Perfluoroundecanoic ad | cid (PFUnA) | 250 | | 2.8 | 7.8 | |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|-----------|------|-----------|-------------------|
| 13C8 PFOA | 114 | | 57 - 153 |
| 13C8 PFOS | 109 | | 70 - 130 |



Analytical Data

Client: Dalton Utilities Job Number: 280-8169-1

General Chemistry

Client Sample ID:

AB-5

Lab Sample ID:

280-8169-1

Client Matrix:

Solid

Date Sampled: 10/06/2010 1405

Date Received: 10/07/2010 0900

RL RL Dil Method Analyte Result Qual Units % 0.10 0.10 1.0 D-2216 Percent Moisture 36 DryWt Corrected: N Analysis Batch: 280-34968 Date Analyzed: 10/08/2010 0934



